

FIG. 1

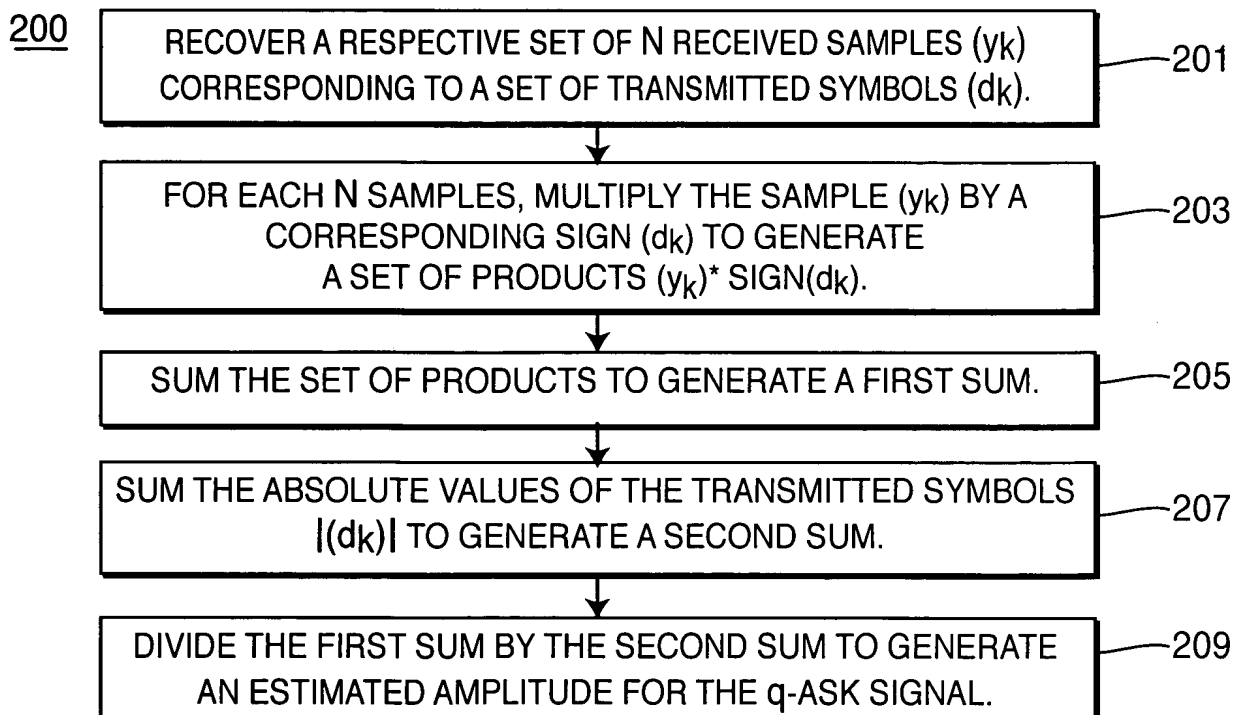
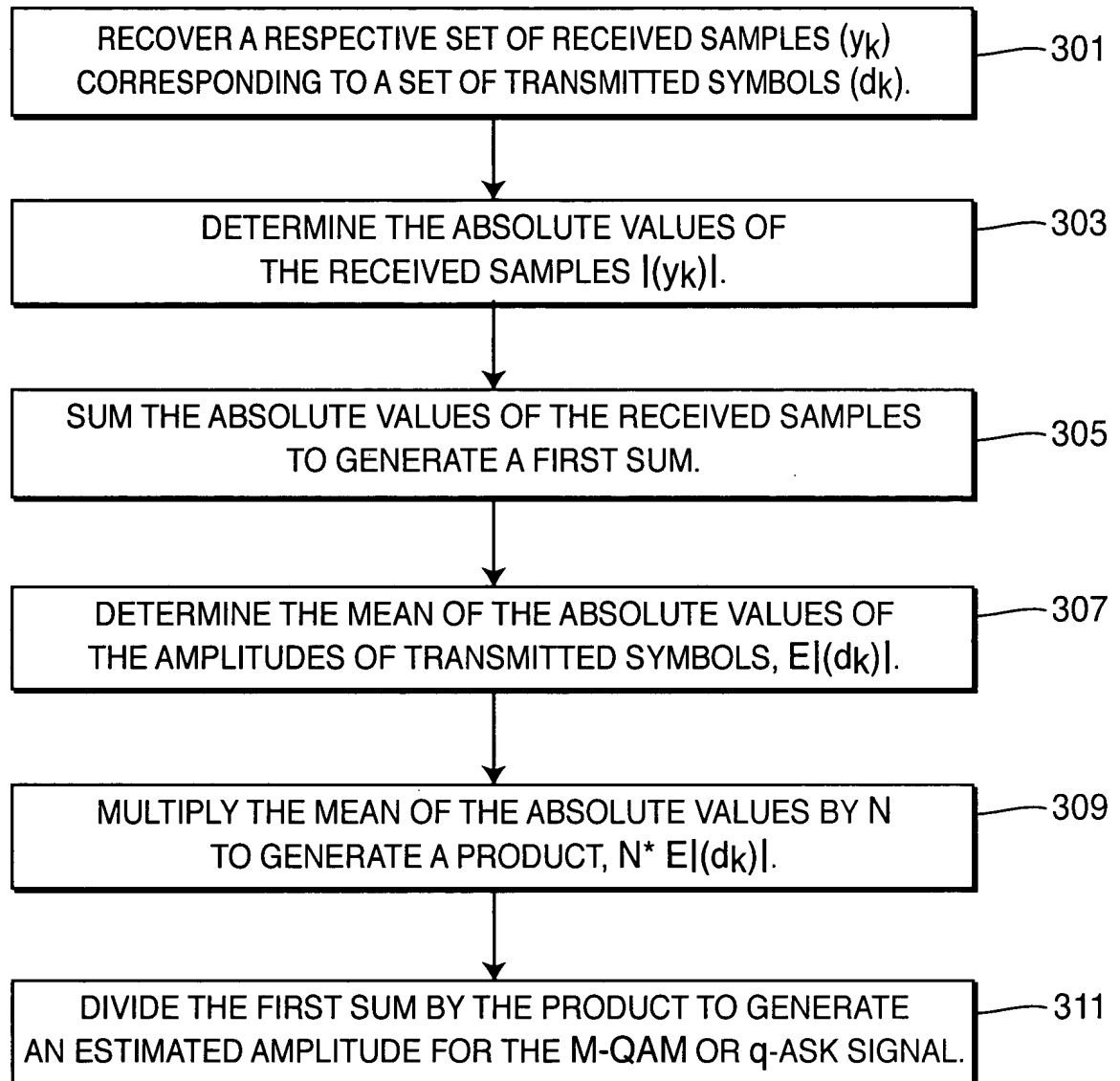
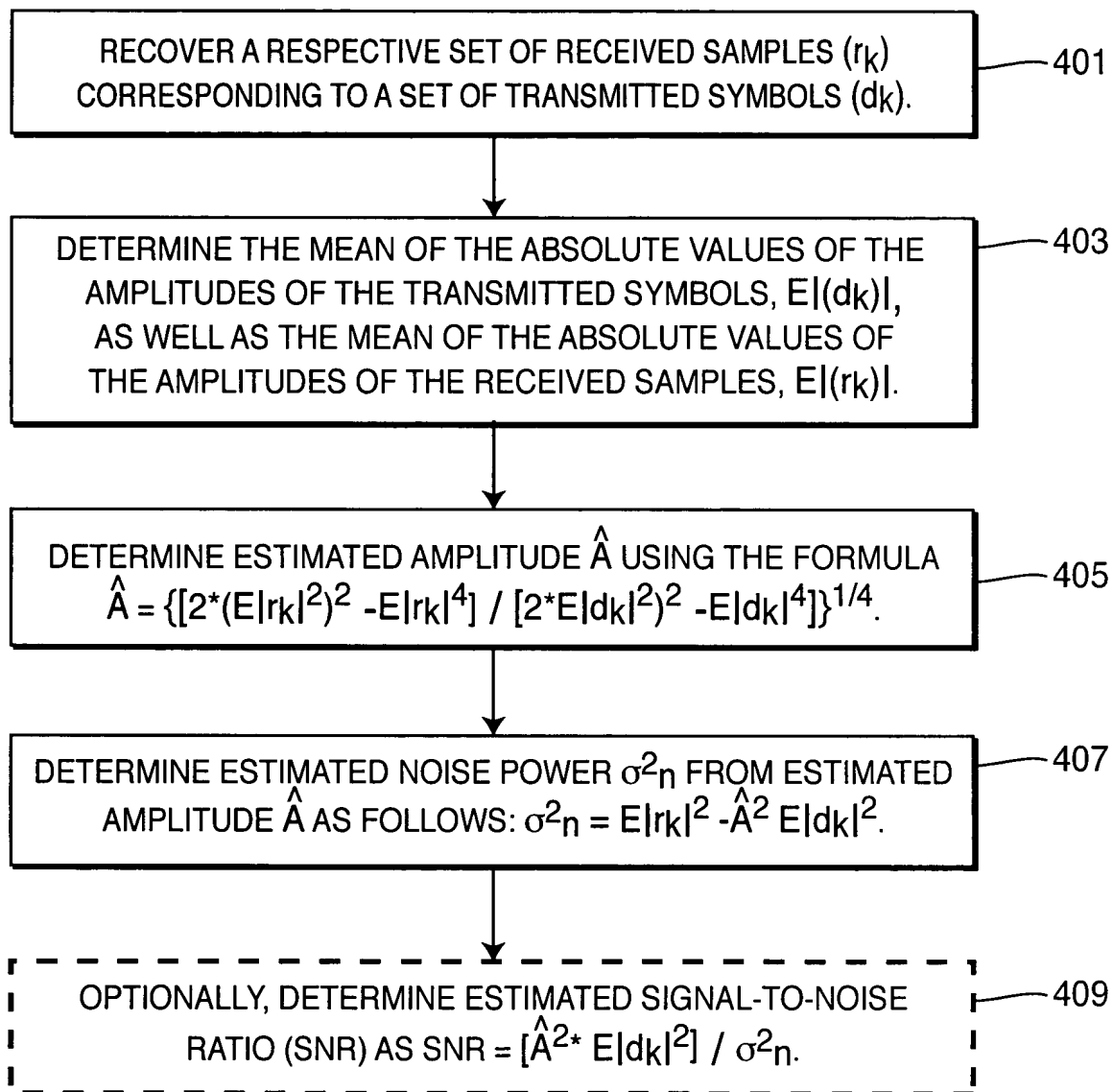


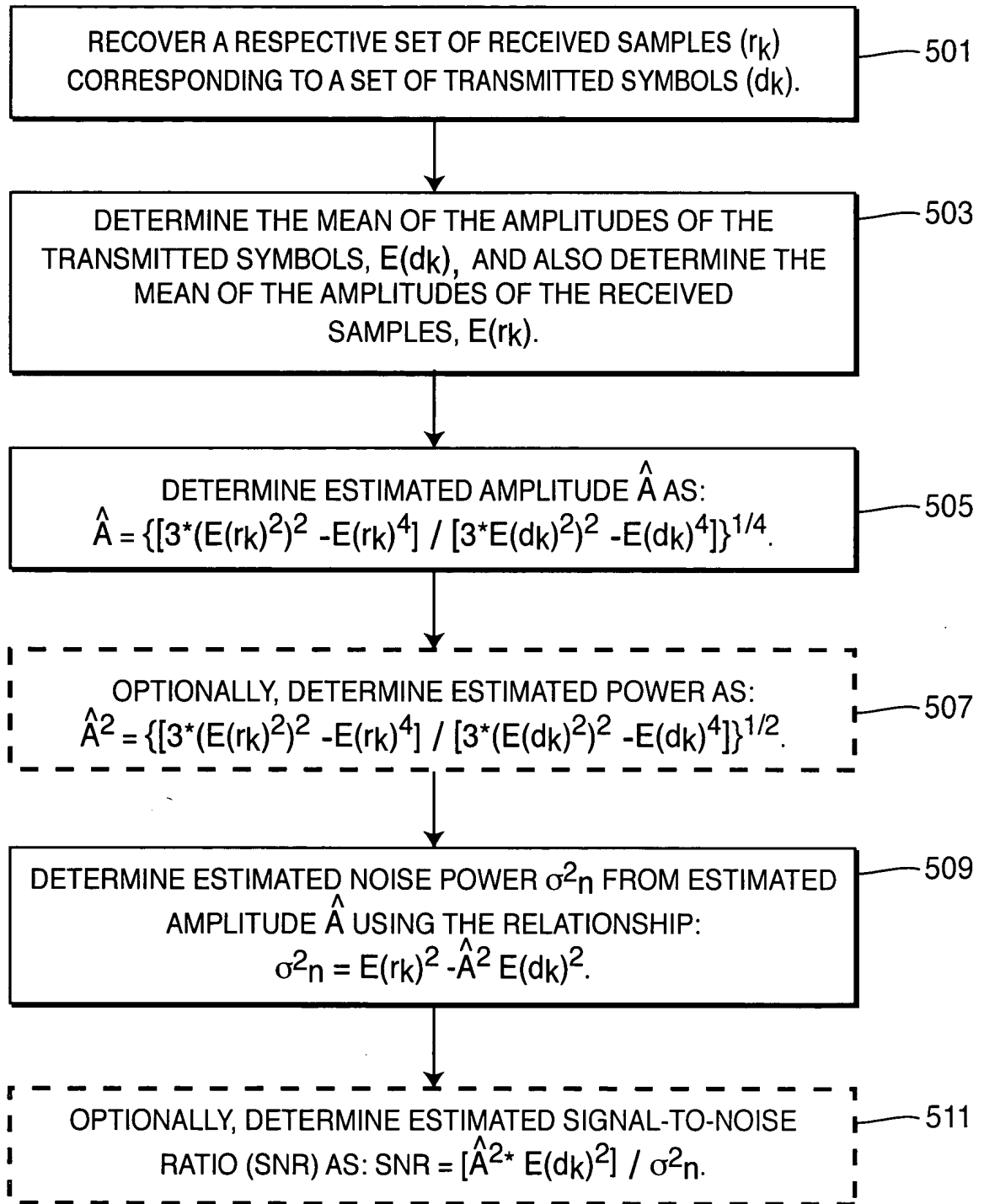
FIG. 2

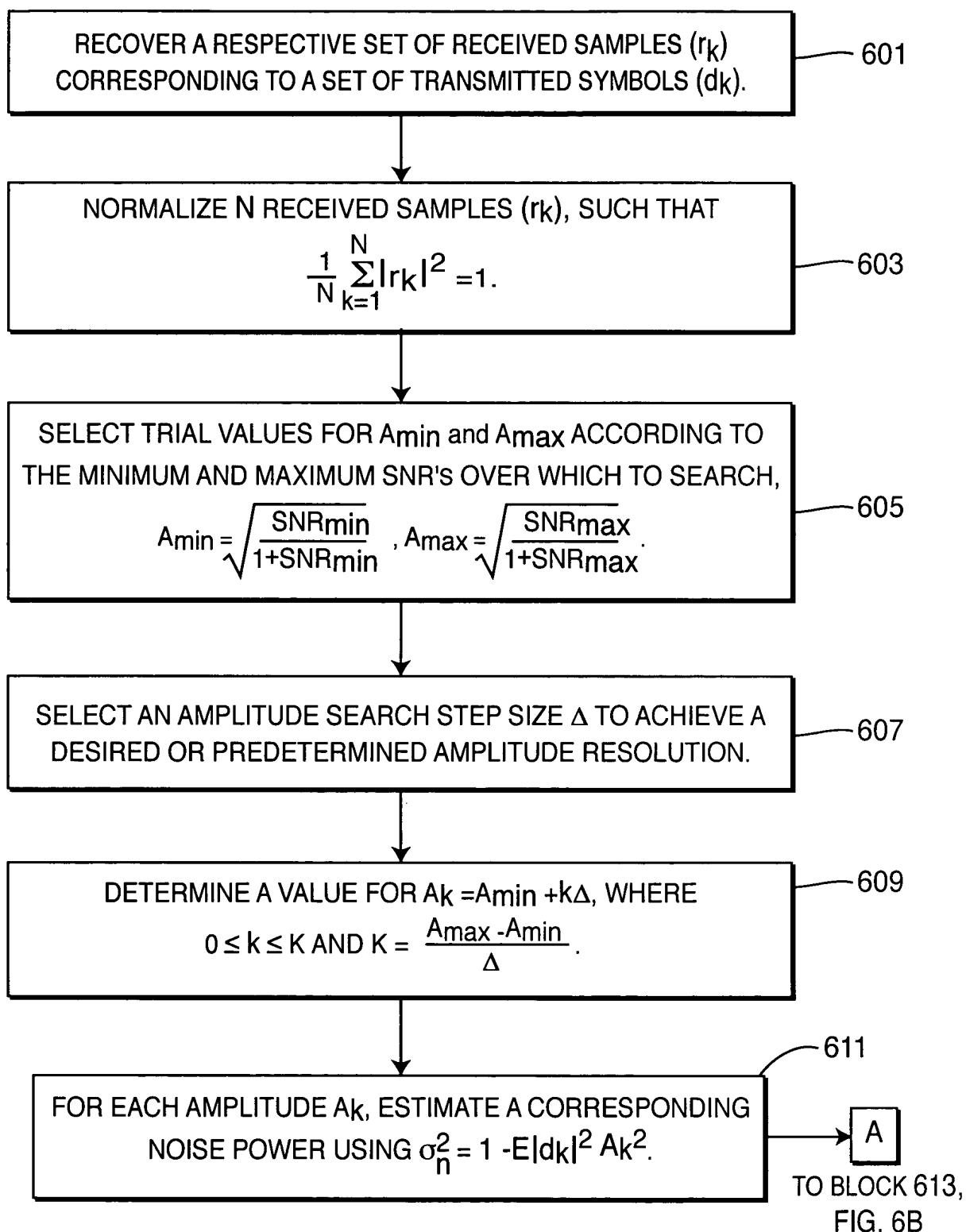
300**FIG. 3**

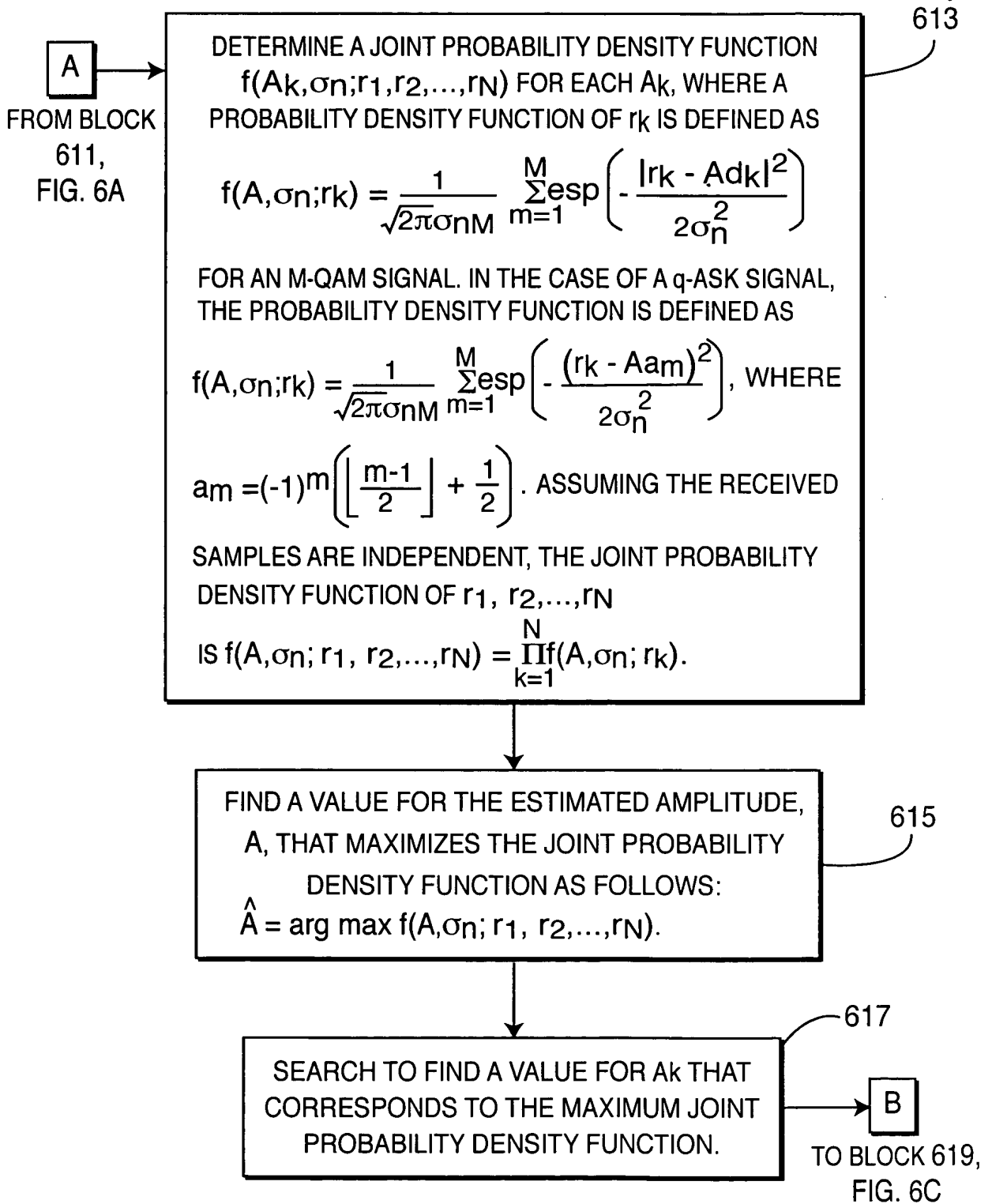
400

**FIG. 4**

500

**FIG. 5**

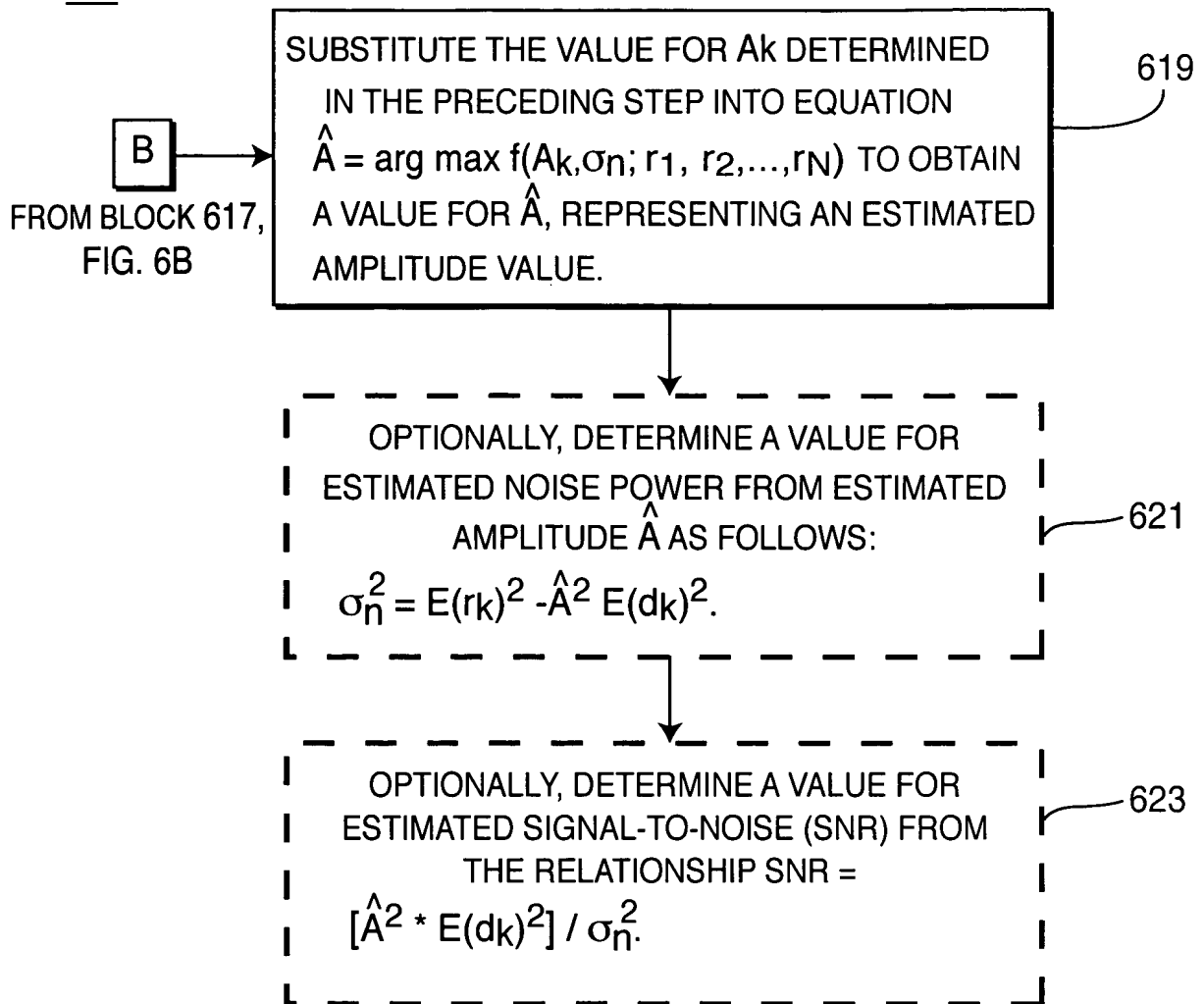
**FIG. 6A**

**FIG. 6B**

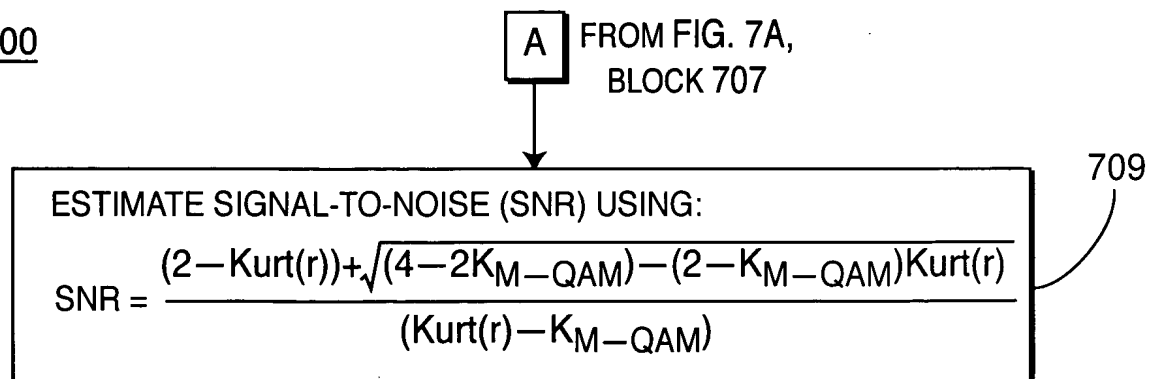


600

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**FIG. 6C**

700

**FIG. 7B**

DETERMINE SECOND-ORDER AND FOURTH-ORDER MOMENTS OF A SET OF RECEIVED SAMPLES (r_k). THE SECOND-ORDER MOMENT IS DEFINED AS $E\{|r_k|^2\} = E\{|n_k|^2\} + E\{|d_k|^2\}$, AND THE FOURTH-ORDER MOMENT IS DEFINED AS $E\{|r_k|^4\} = E\{|n_k|^4\} + E\{|d_k|^4\} + E\{|n_k|^2\}E\{|d_k|^2\}$, WHERE d_k DENOTES THE TRANSMITTED SYMBOLS AND n_k DENOTES A NOISE COMPONENT THAT IS RECOVERED WITH THE RECEIVED SAMPLES r_k .

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DIVIDE THE FOURTH-ORDER MOMENT BY THE SECOND-ORDER MOMENT SO AS TO IMPLEMENT A KURTOSIS OPERATION AS FOLLOWS:

$$Kurt(r) \equiv \frac{E\{|r_k|^4\}}{E\{|r_k|^2\}^2} = \frac{E\{|d_k|^4\} + E\{|n_k|^4\} + 4E\{|d_k|^2\}E\{|n_k|^2\}}{E\{|d_k|^2\}^2 + E\{|n_k|^2\}^2 + 2E\{|d_k|^2\}E\{|n_k|^2\}}$$

THE FOREGOING EXPRESSION FOR KURTOSIS INCLUDES A FIRST KURTOSIS COMPONENT ATTRIBUTABLE TO THE RECEIVED SIGNAL, AND A SECOND KURTOSIS COMPONENT CORRESPONDING TO THE RECEIVED NOISE.

705

DETERMINE THE SECOND COMPONENT OF KURTOSIS, CORRESPONDING TO RECEIVED NOISE, AS FOLLOWS: ASSUMING THE EXISTENCE OF COMPLEX CIRCULARLY SYMMETRIC GAUSSIAN NOISE, THE KURTOSIS OF THE NOISE COMPONENT ALONE IS

$$K_{CG} \equiv \frac{E\{|n_k|^4\}}{E\{|n_k|^2\}^2} = 2.$$

707

DETERMINE THE FIRST COMPONENT OF KURTOSIS, CORRESPONDING TO THE SIGNAL, (K_{sig}), AS

$$K_{sig} \equiv \frac{E\{|d_k|^4\}}{E\{|d_k|^2\}^2} \cdot \text{IN THE CASE OF AN M-QAM SIGNAL, } K_{sig} \text{ IS}$$

DENOTED AS K_{M-QAM} .

A

TO FIG. 7B,
BLOCK 709

FIG. 7A